

OUTBOUND MAIL PIECE TRACKING

CROSS REFERENCE TO RELATED APPLICATIONS

This application is related to co-pending U.S. Patent Application No. 10/731,992, attorney docket no. PSTA0003/MRK, entitled "COMPUTER POSTAGE AND MAILING TRACKING LABELS," filed on December 8, 2003; U.S. Patent Application No. 09/975,532, filed October 10, 2001, entitled "SYSTEM AND METHOD FOR PROVIDING COMPUTER-BASED POSTAGE STAMPS," which claims the benefit of U.S. Provisional Application No. 60/239,424, filed Oct. 10, 2000, entitled "A SYSTEM AND METHOD FOR PROVIDING COMPUTER BASED POSTAGE STAMPS"; U.S. Patent Application No. 09/905,329, filed July 13, 2001, entitled "WEB-ENABLED VALUE BEARING ITEM PRINTING"; U.S. Patent Application No. 09/585,025, filed June 1, 2000 and entitled "ON-LINE VALUE BEARING ITEM PRINTING"; and U.S. Patent Application No. 10/197,044, entitled "GENERIC VALUE BEARING ITEM LABELS", filed July 16, 2002, all of which have been, or will be, commonly assigned, the entire contents and disclosures of all of which are hereby incorporated by reference for all purposes as if fully set forth herein.

FIELD OF THE INVENTION

The field of the present invention is postal systems, and particularly, postal tracking systems.

BACKGROUND OF THE INVENTION

CONFIRM® service is a product offered by the United States Postal Service. U.S. Postal Service Publication 197 ("Publication 197") describes in detail various aspects of the CONFIRM® service and CONFIRM® service interfaces; Publication 197 is incorporated by reference in full herein for all purposes as if fully stated herein.

CONFIRM® is a mail tracking service of PLANET™ Codes that provides electronic tracking information to USPS customers about their First-Class,

1 Standard letter-size, flat mail and periodicals. CONFIRM® provides advance
2 delivery information about incoming hard-copy reply mail ("Origin CONFIRM®")
3 and outbound mail ("Destination CONFIRM®").

4 In order to track mail, CONFIRM® uses a combination of two tracking
5 numbers: a 5- or 11-digit POSTNET (POStal Numeric Encoding Technique)
6 Code and a 12- or 14-digit PLANET™ Code. The POSTNET and PLANET™
7 Codes must be encoded as a barcode and applied to the mail piece.

8 In order to facilitate mail handling and optical reading equipment
9 processing of mail by the USPS and to properly interpret PC Postage, addressee
10 information, and CONFIRM® tracking information, postage indicia and related
11 labels need to be applied according to USPS guidelines. USPS guidelines
12 directed to the margins, label sizes, and placement of postage indicia, and the
13 size, placement, and other characteristics of POSTNET and PLANET™ bar
14 codes, and any facing identification mark (FIM) on mail pieces are described in
15 the Domestic Mail Manual (DMM) and Title 39, Code of Federal Register (CFR),
16 Part 111, the contents of which are incorporated by reference in full herein for all
17 purposes.

18 As each mail piece progresses through to its destination, the CONFIRM®
19 barcode on each mail piece is scanned at the different USPS processing facilities
20 through which it passes. Electronic information for each scan is captured and is
21 sent to a centralized network service, which collects the scan data and packages
22 it for use by USPS customers. The electronic scan information is then
23 electronically transferred from the centralized network and is made available in
24 two ways: through accessing a PLANET™ Codes website or via transmission of
25 electronic files sent to subscribing USPS customers.

26 CONFIRM®-barcoded mail pieces are scanned during the passage of the
27 mail piece through various USPS processing facilities, but are not scanned
28 (unless accompanied by Delivery Confirmation, Signature Confirmation, or
29 similar final mail piece disposition service) upon actual delivery.

30 A POSTNET Code identifies a particular delivery address. A PLANET™
31 Code identifies a particular CONFIRM® Subscriber's mailing. If more than one

1 mail piece in a single mailing is addressed to the same delivery address, then the
2 CONFIRM® Service does not provide individual mail piece tracking.

3 The CONFIRM® service was designed to serve the high-volume mailer
4 such as telemarketers and other businesses. High-volume mailers can benefit
5 from tracking outbound mailings. For example, information about customer
6 receipt of certain mailings would allow mailers to plan subsequent business
7 activities, such as synchronizing telemarketing efforts with delivery of
8 solicitations, or augmenting direct mail pieces with other advertising media.

9 The high-volume mailer basis for the CONFIRM® service is evident from
10 the subscription fee structure charged by the U.S. Postal Service. The
11 subscription fees, ranging from \$2,000 for a three-month period, to an annual
12 \$10,000 fee, are based on the number of scans, measured in the millions.

13 Although large mailings are not normally the concern of individuals,
14 individuals with low volume mailings could benefit from the ability to track
15 processing and delivery of individual mail pieces. Low volume mailers will not be
16 motivated to pay the high subscription fees for the U.S. Postal CONFIRM®
17 Service. Even if they paid such fees, the CONFIRM® Service does not
18 guarantee tracking of individual mail pieces.

19 Various private carriers provide individual parcel tracking, for a piece-
20 based premium. And yet, no mail piece tracking is available for letters mailed
21 using first class U.S. postage.

22 DELIVERY CONFIRMATION is another service provided by the U.S.
23 Postal Service. DELIVERY CONFIRMATION provides the date, time and ZIP
24 Code of delivery or attempted delivery. DELIVERY CONFIRMATION can be
25 purchased for PRIORITY MAIL® items, Package Services parcels, STANDARD
26 MAIL® parcels, and FIRST-CLASS MAIL® parcels, but is not available for use
27 with FIRST-CLASS MAIL® letters.

28 A way for low-volume mailers to track individual outbound mail pieces is
29 needed.

SUMMARY OF THE INVENTION

The exemplary embodiment of the present invention provides a way for low-volume mailers to track individual outbound mail pieces, including tracking of individual U.S. Postal Service FIRST-CLASS MAIL® letters. The exemplary embodiment of the present invention supports tracking of multiple mail pieces mailed by multiple mailers using a single computer-based postage system.

The exemplary embodiment of the present invention encodes a unique mail piece tracking identifier as a CONFIRM® service identifier in a graphic symbology. The unique mail piece tracking identifier of the exemplary embodiment of the present invention conforms with requirements of a CONFIRM® service identifier, while at the same time, provides, for a defined period of time, mail-piece-level uniqueness for first class and other mail class mail piece tracking.

Although the exemplary embodiment of the present invention is sometimes described herein with specific reference to tracking outbound first class mail pieces, it will be understood by someone with ordinary skill in the art that the present invention would apply equally to other classes of mail as long as the USPS, or other postal service, provides the CONFIRM® service, or a service such as, or similar to, CONFIRM® for that class of mail. It will be understood by someone with ordinary skill in the art that Express Mail, and mail pieces for which Delivery Confirmation or Signature Confirmation has been purchased, are assigned a unique tracking identifier with which a postal customer can track the delivery of the particular mail piece. However, in the case of Delivery Confirmation or Signature Confirmation pieces, only actual delivery, not progress through the postal system, can be tracked by virtue of the Delivery Confirmation or Signature Confirmation identifier. Further, in the case of PC Postage, Express Mail PC Postage is not specifically related in a computer system to a particular Express Mail Serial Number, but rather, is related to a date and delivery address. Further, in the case of PC Postage for Express Mail, Delivery Confirmation and Signature Confirmation pieces, although the PC Postage label itself is related to a particular mailer, the Express Mail, Delivery Confirmation or Signature

1 Confirmation tracking number for the particular piece of mail is not related in a
2 computer system to a particular mailer.

3 The exemplary embodiment of the present invention provides a method
4 for tracking individual outbound mail pieces, said method comprising: assigning
5 an identifier to a particular mail piece wherein said identifier uniquely identifies
6 the particular mail piece during a particular period of time; and relating the unique
7 mail piece identifier to a particular mailer.

8 The exemplary embodiment of the present invention provides a unique
9 mail piece identifier graphic symbology, said unique mail piece identifier graphic
10 symbology comprising: an encoded subscriber identifier; an encoded mailing
11 identifier; and an encoded delivery address identifier, wherein the encoded
12 delivery address identifier is unique within a combination of the encoded
13 subscriber identifier and the encoded mailing identifier.

14 The exemplary embodiment of the present invention provides a method of
15 encoding a unique mail piece identifier as a graphic symbology, said method
16 comprising: assigning an identifier to a particular mail piece wherein said
17 identifier uniquely identifies the particular mail piece during a particular period of
18 time and wherein said identifier comprises a subscriber identifier, a mailing
19 identifier, and a delivery address identifier, wherein the delivery address identifier
20 is unique within a combination of the subscriber identifier and the mailing
21 identifier.

22 23 **BRIEF DESCRIPTION OF THE DRAWINGS**

24 These and other features, aspects, and advantages of the present
25 invention will become better understood with regard to the following description,
26 appended claims, and accompanying drawings in which:

27 FIG. 1 is a graphic representation depicting an exemplary graphical user
28 interface for obtaining a customer's request to track a particular mail piece in an
29 exemplary embodiment of the present invention;

1 FIG. 2 is a high level logic flow diagram depicting an exemplary process
2 for building and storing a unique mail piece tracking identifier in an exemplary
3 embodiment of the present invention;

4 FIGS. 3A and 3B are high level logic flow diagrams depicting an
5 exemplary process for building a unique mail piece tracking number in an
6 exemplary embodiment of the present invention;

7 FIG. 4 is a high level logic flow diagram depicting an exemplary process
8 for processing electronic scan data in an exemplary embodiment of the present
9 invention;

10 FIG. 5 is a high level logic flow diagram depicting an exemplary process
11 for reporting mail piece tracking information to a customer; and

12 FIG. 6 is a block diagram depicting an exemplary configuration of server
13 computers and a tracking applications program interface for facilitating tracking of
14 mail pieces in an exemplary embodiment of the present invention.

15
16 **DETAILED DESCRIPTION OF THE INVENTION**

17 In the exemplary embodiment of the present invention, a CONFIRM®
18 Service subscriber obtains at least one subscriber identifier, such as by, among
19 other things, paying the appropriate CONFIRM® Service subscription fee.

20 The exemplary CONFIRM® Service subscriber then resells CONFIRM®
21 Service access to low volume individual mailers. Depending on the number of
22 customers that use the exemplary CONFIRM® Service subscriber's services, the
23 exemplary CONFIRM® Service subscriber may obtain a plurality of subscriber
24 identifiers.

25 The exemplary mail piece tracking provider described herein is a
26 CONFIRM® Service subscriber reseller. It will be understood by someone with
27 ordinary skill in the art that the exemplary CONFIRM® Service subscriber reseller
28 mail piece tracking embodiment of the present invention is illustrative and non-
29 limiting, and that the present invention will be equivalently applicable to non-
30 reseller embodiments.

1 FIG. 2 is a high level logic flow diagram depicting an exemplary process
2 for building and storing a unique mail piece tracking identifier in an exemplary
3 embodiment of the present invention. As depicted in function block 20 of FIG. 2,
4 a customer of the exemplary CONFIRM® Service subscriber reseller mail piece
5 tracking provider requests that a particular mail piece be tracked. For each such
6 mail piece requested by a customer to be tracked, the exemplary CONFIRM®
7 Service subscriber reseller mail piece tracking provider computer system
8 receives the customer's request, as depicted in function block 21 of FIG. 2, and
9 will request from the customer payment and authorization to proceed, as
10 depicted in function block 22 of FIG. 2, before proceeding to build a unique mail
11 piece tracking identifier.

12 The exemplary embodiment of the present invention described herein is
13 an Internet application of the present invention. It will be understood by someone
14 with ordinary skill in the art that the exemplary Internet embodiment of the
15 present invention is illustrative and non-limiting, and that the present invention
16 will be equivalently applicable to non-Internet embodiments, including but not
17 limited to, PC-based systems.

18 The exemplary embodiment of the present invention is implemented in an
19 online Internet-based (or PC-based) postage system. The United States Postal
20 Service (USPS) provides the Information Based Indicia Program (IBIP.) The IBIP
21 facilitates PC-based (Personal Computer based) Postage, also sometimes
22 referred to as computer-based, or Internet-based, Postage. With PC Postage, a
23 user can purchase postage credit, and print the postage in the form of PC
24 Postage onto a label or directly onto a mail piece. A PC Postage label provides a
25 human-readable portion and a 2-dimensional barcode portion. The human-
26 readable portion includes the postage value, mail class, the date, and optionally
27 a logo. The barcode portion is intended to help thwart fraud, and includes
28 information about the mail piece including the destination ZIP code, the amount
29 of postage applied, the date and time the postage was applied, and a digital
30 signature so that the USPS can validate the authenticity of the postage.

1 In one exemplary embodiment of PC Postage, a user subscribes to a third
2 party Internet postage provider, such as, for example, Stamps.com (of Santa
3 Monica, Calif.), and by using postage software made available by the Internet
4 postage provider, postage value can be downloaded to the user's computer. The
5 user can then print the postage indicia, by an ordinary laser or ink jet printer,
6 directly onto the mail piece itself (e.g. onto business envelopes), onto a label to
7 be applied to the mail piece, or alternately on an insert that can be placed into a
8 window envelope so that it will show through a window envelope. Such postage
9 software preferably works in conjunction with other software programs, such as
10 word processing, accounting, database, and contact management software to
11 allow a user to conveniently print PC Postage at the same time that addressee
12 and bar code information is printed, and, in some cases of envelope printing, at
13 the same time as the sender's return address is printed.

14 An example of a computer-based postage system is a software-based,
15 online postage system described in U.S. Patent Application Ser. No. 09/163,993
16 filed on Sep. 29, 1998, by Mohan Ananda, entitled "On Line Postage System,"
17 the contents of which are hereby incorporated by reference as if set forth in full.
18 The online postage system software comprises user code, also sometimes
19 referred to as client software, that resides on a client system, and controller code,
20 also sometimes referred to as server software, that resides on a server system.
21 An exemplary on-line postage system may comprise a user system electronically
22 connected to a server system, which in turn is connected to a USPS system. The
23 server system is preferably capable of communicating with one or more client
24 systems simultaneously.

25 It will be understood by someone with ordinary skill in the art that the
26 present invention would be equivalently applicable in contexts other than an
27 Internet-based tracking service provider, including, but not limited to, other PC-
28 and computer-based systems.

29 FIG. 1 is a graphic representation depicting an exemplary graphical user
30 interface for obtaining a customer's request to track a particular mail piece. In
31 the exemplary interface depicted in FIG. 1, the customer requests that a

1 particular mail piece for which the customer is printing Internet FIRST-CLASS
2 postage be tracked by clicking an onscreen tracking option button 10.

3 It will be understood by someone with ordinary skill in the art that there are
4 many ways and formats with which to capture a customer's online request for a
5 service, varying from pull down menus of selectable services, to clicking or
6 otherwise indicating a particular option presented on a graphical user interface;
7 the exemplary graphical user interface is illustrative and non-limiting.

8 In the exemplary embodiment, when a customer requests that a particular
9 mail piece be tracked, a unique identifier is then assigned to the particular mail
10 piece. The exemplary unique mail piece identifier comprises a specially
11 assigned combination of a POSTNET Code and a PLANET™ CODE such that,
12 for a defined period of time, the POSTNET Code is unique within the PLANET™
13 Code. This exemplary unique mail piece identifier is referred to herein as a
14 "composite confirm ID" or "CCID."

15 PLANET™ Codes are 12- or 14-digit codes and can be represented as
16 barcodes such as a one-dimensional barcode. The first two digits of a
17 PLANET™ Code represent the type of CONFIRM® service: Destination
18 CONFIRM® or Origin CONFIRM®.

19 For Destination CONFIRM®, the next 9, or 11, digits of the PLANET™
20 Code comprise a 5-digit Subscriber ID that is a unique identifier of the particular
21 CONFIRM® subscriber and a 4-, or 6-, digit field defined by the particular mailer
22 to identify the actual mailing. The 12th, or 14th, digit of the PLANET™ Code is a
23 check-sum digit for error detection.

24 A POSTNET Code comprises a 5-digit ZIP code and, if the particular
25 delivery address can be found in a postal address database, a 4-digit area code,
26 and a 2-digit delivery address code. If the particular delivery address cannot be
27 found in the postal address database, then, as long as the city, state and ZIP
28 code of the delivery address are otherwise valid, the POSTNET Code comprises
29 only the 5-digit ZIP code.

30 In the exemplary embodiment, the POSTNET Code for the exemplary
31 POSTNET Code unique mail piece identifier is populated by the Internet Postage

1 system with the appropriate 5-digit ZIP code, 4-digit area code, and 2-digit
2 delivery address code fields obtained by the Internet Postage system in response
3 to the customer's input of a delivery address 11.

4 In order for the composite confirm ID to uniquely identify a particular mail
5 piece, the composite confirm ID needs to be unique for a time period that is at
6 least as long as, or exceeds, the time expected to be required for the mail piece
7 to be delivered, and scanned. In the exemplary embodiment of the present
8 invention, the uniqueness time period will be set to 30, 60, 90 days, or for certain
9 types of mail, permanent.

10 It will be understood by someone with ordinary skill in the art that the
11 composite confirm ID (CCID) need not necessarily include the entire POSTNET
12 Code to uniquely identify a mail piece. It is possible to use less than the full
13 POSTNET Code to construct a unique mail piece identifier. For example, 1, 2 or
14 more digits of the POSTNET Code could be used to construct a unique CCID.
15 The number of digits of the POSTNET Code that would be needed to construct a
16 unique CCID mail piece identifier would depend on circumstances regarding a
17 particular CONFIRM® Service subscriber and the number of its customers.

18 As briefly previously mentioned above, the exemplary mail piece tracking
19 provider is itself a CONFIRM® Service subscriber. As a CONFIRM® Service
20 subscriber, the exemplary mail piece tracking provider registers with the U.S.
21 Postal Service to obtain one or more subscriber identifiers (subscriber IDs). For
22 non-limiting illustrative purposes only, three (3) exemplary subscriber IDs will be
23 described herein, namely "01", "02" and "03." It will be understood by someone
24 with ordinary skill in the art that more or less subscriber IDs could be used
25 without departing from the spirit of the invention.

26 Continuing with FIG. 2, when a customer of the exemplary mail piece
27 tracking provider requests 20 that a particular mail piece be tracked, the
28 exemplary Internet Postage computer system receives 21 the tracking request
29 and charges 22 the customer, such as through a pre-established account
30 balance, an amount of money appropriate for the tracking of the particular mail
31 piece. The system checks in step 23 to determine whether or not tracking is

1 authorized. If the customer declines to pay for the tracking service, the system
2 returns 24 to its other processing. If the customer has paid the requested
3 amount, such as, e.g., by indicating (e.g., clicking on an online print button on a
4 user interface (not shown)) authorization of the printing of an Internet Postage
5 stamp and a tracking label, then the exemplary Internet Postage computer
6 system builds 25, and assigns to the particular mail piece, a unique composite
7 confirm ID (CCID) and stores 26 the assigned unique composite confirm ID, with
8 other information described in more detail below, in a memory 27, such as in a
9 database or lookup table. The memory storage of the assigned CCIDs is
10 sometimes referred to herein, for non-limiting illustrative purposes, as the "CCID
11 database" 27.

12 Once the system has built and assigned a unique CCID to the particular
13 mail piece, the system then encodes the CCID and prints 28 a mail piece
14 tracking graphic symbology, that can be applied to the particular mail piece and
15 that can then be scanned by the U.S. postal service. The general way in which
16 data is encoded for printing as a graphic symbology is well known in the art. The
17 particular requirements for encoding and printing a U.S. Postal CONFIRM®
18 identifier is prescribed in U.S. Postal Service Publication 197, previously
19 incorporated by reference herein for all purposes.

20 After encoding and printing 28 the mail piece tracking graphic symbology,
21 the system returns 24 to its other processing.

22 FIGS. 3A and 3B are high level logic flow diagrams depicting in more
23 detail an exemplary process for building (element 25 in FIG. 2) a unique mail
24 piece tracking number in an exemplary embodiment of the present invention. In
25 order for the composite confirm ID to uniquely identify a particular mail piece, the
26 exemplary Internet Postage computer system first searches 30 the CCID
27 database 27 for a previously assigned composite confirm ID with the same
28 POSTNET Code as the POSTNET Code of the particular mail piece for which
29 tracking has been requested by the customer. That is, the exemplary Internet
30 Postage computer system uses the POSTNET Code of the particular mail piece
31 for which tracking has been requested by the customer as a lookup key.

1 In one alternative embodiment, instead of using only the POSTNET Code
2 as the lookup key, a combination of POSTNET Code and mail class/service type
3 code is used as a lookup key.

4 Continuing with FIGS. 3A and 3B, the exemplary Internet Postage
5 computer system tests (test step 31, FIG. 3A) whether or not the mail piece
6 POSTNET was found. If the POSTNET Code (or in the alternative embodiment,
7 the combination of the POSTNET Code and mail class/service type code) does
8 not exist 32 in the CCID database 27, then the exemplary Internet Postage
9 computer system uses (in step 33) the first Mailing ID ("000001") and the first
10 subscriber ID ("00001") to build 34 the unique composite confirm ID (CCID). The
11 system then returns 35 to its other processing

12 In the case in which the POSTNET Code (or in the alternative
13 embodiment, the combination of the POSTNET Code and mail class/service type
14 code) does not exist in the CCID database, in order to build the unique CCID, the
15 exemplary Internet Postage computer system sets a first field (referred to herein
16 as the "CCID type of CONFIRM® service") to a value designating that the
17 CONFIRM® service type is "Destination" CONFIRM®. In the exemplary
18 embodiment, the CCID type of CONFIRM® service field is a 2-digit field.

19 In the case in which the POSTNET Code (or in the alternative
20 embodiment, the combination of the POSTNET Code and mail class/service type
21 code) does not exist in the CCID database, in order to further build the unique
22 CCID, the exemplary Internet Postage computer system sets a second field
23 (referred to herein as the "CCID subscriber ID") in the CCID to a first subscriber
24 ID, e.g., "00001". In the exemplary embodiment, the CCID subscriber ID is a 5-
25 digit field.

26 The exemplary Internet Postage computer system sets a third field
27 (referred to herein as the "CCID mailing ID") in the CCID to a first mailing ID, e.g.,
28 "000001". In the exemplary embodiment, the CCID mailing ID is a 6-digit field.
29 In an alternative embodiment, the CCID mailing ID could be a 4-digit field.

30 The exemplary Internet Postage computer system sets a fourth field
31 (referred to herein as the "CCID POSTNET") in the CCID to the POSTNET Code

1 of the particular mail piece for which the customer has requested tracking. In the
2 exemplary embodiment system, the customer mailer will have requested and
3 paid for an Internet-based postage-indicia-bearing label to be printed with which
4 to mail the particular mail piece. In those instances in which the customer mailer
5 has provided the delivery address for the particular mail piece in order for the
6 system to prepare the Internet-based postage-indicia-bearing label for the mail
7 piece, the system will use the Internet-based postage-indicia-bearing label
8 delivery address information supplied by the customer mailer with which to
9 populate the CCID POSTNET.

10 In the alternative exemplary embodiment in which the lookup key includes
11 both the POSTNET Code and the mail class/service type code, the exemplary
12 alternative Internet Postage computer system would also set a fifth field (referred
13 to herein as the "CCID service type") in the CCID to the mail class/service type of
14 the mail piece for which the customer has requested tracking.

15 Once the exemplary Internet Postage computer system (sometimes
16 referred to herein as the "system") has built a CCID, such as is depicted in
17 function blocks 33-34 of FIGS. 3A-3B, to uniquely identify the mail piece to be
18 tracked, the system builds a CCID record, as depicted in function block 26 in
19 FIG. 2, for storage in the CCID database 27.

20 In building (function 26, FIG. 2) the CCID record, the system assigns a
21 permanently unique "Print ID" to the just-built CCID and associates the Print ID
22 with an identifier of the particular customer that requested tracking of the
23 particular mail piece. The system then populates the CCID database record for
24 storage with the following information: Print ID, CCID, Customer ID/Meter No.,
25 mailing date, time period required for uniqueness, print date (optional in some
26 embodiments), amount of postage (optional in some embodiments), tracking fee
27 (optional in some embodiments), and Mail Class/Service Type (optional in some
28 embodiments). In one alternative embodiment, instead of storing in each CCID
29 database record a time period during which the CCID must remain unique, the
30 system would store an expiration date. Once the CCID database record has
31 been built, the system stores the CCID database record in the CCID database.

1 As will be understood by someone with ordinary skill in the art, the above-
2 identified data fields, in what is referred to herein as the CCID database record,
3 are exemplary and non-limiting. In alternative embodiments, the CCID database
4 record may contain links to other databases or tables in order to link the
5 particular CCID database record to a particular customer.

6 Returning to FIGS. 3A-3B, if the POSTNET Code (or in the alternative
7 embodiment, the combination of the POSTNET Code and mail class/service type
8 code) already exists in the CCID database 27, then the exemplary Internet
9 Postage computer system must first determine the next available unique
10 combination of the subscriber ID and Mailing ID in order to build the unique
11 composite confirm ID (CCID).

12 In order to determine the next available unique combination of the
13 subscriber ID and Mailing ID, the system will search 40 for the CCID database
14 record for the given POSTNET Code (or in the alternative embodiment, the
15 combination of the POSTNET Code and mail class/service type code) with the
16 highest (maximum) subscriber ID and the highest (maximum) Mailing ID.
17 Depending on the computer language and database technology used, the search
18 may be initiated by an instruction to give the CCID database record with the
19 lookup POSTNET Code (or in the alternative embodiment, the combination of the
20 lookup POSTNET Code and mail class/service type code) having the maximum
21 subscriber ID and the maximum Mailing ID.

22 Once the system returns the CCID database record with the lookup
23 POSTNET Code (or in the alternative embodiment, the combination of the lookup
24 POSTNET Code and mail class/service type code) having the maximum
25 subscriber ID and the maximum Mailing ID, the system determines 41 whether
26 the next Mailing ID is available for the maximum subscriber ID. If the next
27 Mailing ID is available for the maximum subscriber ID, the system then uses 42
28 the next available (next increment of) Mailing ID for that maximum subscriber ID
29 to build 34 the unique CCID, and then returns 35 to the system's other
30 processing.

1 If the next available Mailing ID exceeds the maximum allowable number
2 (in the exemplary embodiment, "999999"), and the next available Mailing ID is
3 "000001", the system then determines 50 whether the next subscriber ID is
4 available. If the next subscriber ID is available, the system then uses 51 the next
5 available subscriber ID and the first ("000001") Mailing ID for that subscriber ID
6 and builds 34 the unique CCID and then returns 35 to the system's other
7 processing.

8 If when the system attempts to use the next available Mailing ID and
9 subscriber ID, there are no more available Mailing IDs for existing subscriber IDs,
10 then the system searches 60 for existing CCID database records for the lookup
11 POSTNET Code (or in the alternative embodiment, the combination of the lookup
12 POSTNET Code and mail class/service type code), for which the Mailing date for
13 the particular mail piece to be tracked exceeds the expiration date for the CCID
14 database record. The expiration date will be either stored in the CCID database
15 record, or can be calculated by adding the time period required for uniqueness
16 that is stored in the CCID database record to the mailing date that is stored in the
17 CCID database record.

18 When an expired CCID database record is returned to the system in
19 response to the search with the mail piece lookup POSTNET Code (or in the
20 alternative embodiment, the combination of the lookup POSTNET Code and mail
21 class/service type code), the system "recycles" the CCID (in function 61, FIG. 3B)
22 -- the system updates the returned expired CCID database record by populating
23 the record with information about the new CCID and print event in order to build
24 34 the unique CCID before returning 35 to the system's other processing.

25 The CCID conforms with the U.S. Postal Service's requirements for a U.S.
26 Postal CONFIRM® service identifier, while at the same time, the CCID provides,
27 for a defined period of time, mail-piece-level uniqueness for mail piece tracking.

28 As was previously described above with regard to FIG. 2, once the system
29 has built 25 a CCID and a CCID Record, and has stored 26 the CCID record on
30 the CCID database 27, the system encodes the CCID for printing as a graphic
31 symbology, and prints the graphic symbology. In the exemplary embodiment of

1 the present invention, the CCID-encoded graphic symbology is a bar code. In
2 the exemplary embodiment, the system prompts the customer mailer to request a
3 final indication by the customer mailer that the customer mailer is ready for the
4 system to print the graphic symbology. Once the exemplary embodiment system
5 receives the customer mailer's go-ahead to print, the exemplary embodiment
6 system prints 28 the CCID-encoded bar code on a label.

7 In an alternative exemplary embodiment of the present invention, an
8 alternative approach is used to manage CCID life- and expiration- times. The
9 alternative approach uses a first designated account group comprising a first set
10 of subscriber IDs, e.g., subscriber ID 1, 2, and 3, for a designated first period of
11 time, for example, 0-90 virtual relative calendar days. In this embodiment, a
12 virtual relative calendar is used. According to the virtual relative calendar, the
13 virtual relative calendar day is initialized to 0, and is then incremented by one for
14 each real calendar day. During the first period of time, e.g., the first 90 virtual
15 relative calendar days, of this alternative embodiment, the system would assign
16 CCIDs with subscriber IDs from the first account group set of subscriber IDs,
17 e.g., subscriber ID 1, 2, or 3. After the first period of time has expired, this
18 alternative approach then uses a second designated account group comprising a
19 second set of subscriber IDs, e.g., subscriber IDs 4, 5, and 6, for a designated
20 second period of time, e.g., 91-180 virtual relative calendar days. During the
21 second period of time, e.g., the 91-180 virtual relative calendar days, of this
22 alternative embodiment, the system would assign CCIDs with subscriber IDs
23 from the second account group set of subscriber IDs, e.g., subscriber ID 4, 5, or
24 6. After the second period of time expires, this alternative approach would then
25 restart the virtual calendar to virtual relative calendar day zero and would begin
26 again to assign CCIDs with subscriber IDs in the first account group.

27 It will be understood by someone with ordinary skill in the art that the
28 description above of two account groups is illustrative and non-limiting; that the
29 description above of each account group being comprised of three subscriber IDs
30 is illustrative and non-limiting; and that the description above of a particular
31 number of periods of time and of a particular number of days for each period of

1 time is illustrative and non-limiting. More than two account groups could be
2 used. Each account group could be comprised of more than three, or less than
3 three, subscriber IDs. More than two periods of time could be used. And each
4 time period could be set for more than 90 days, or less than 90 days. Further,
5 each time period could be set for a different number of days relative to the
6 number of days of each other time period.

7 In order to track the mail piece, before depositing the mail piece into the
8 U.S. Postal Service mail stream, the customer mailer will affix the printed CCID-
9 encoded bar code label to the mail piece on the delivery-address side of the mail
10 piece in a position relative to the delivery address as specified and required by
11 the U.S. Postal Service. The exemplary embodiment system instructs the
12 customer mailer as to the proper placement of the CCID-encoded bar code label.

13 In the exemplary embodiment system, as described above, the customer
14 mailer has requested and paid for the printing of one or more Internet-based
15 postage-indicia-bearing labels, in some cases including a delivery address label,
16 for affixing to the mail piece. In such case, the customer mailer will affix the
17 Internet-based postage-indicia-bearing label(s), and, if applicable, the address
18 label, and in some cases, a separate CCID-encoded bar code label. In some
19 cases, instead of a single CCID-encoded bar code label, a label bearing a CCID
20 PLANET™ Code barcode and another label bearing a CCID POSTNET Code
21 barcode will be printed, depending on a label set configuration used by a
22 customer mailer and designated to the exemplary embodiment system. It will be
23 understood by someone with ordinary skill that, in yet other cases, the customer
24 mailer could use alternative label set configurations and request printing of a
25 postage-indicia-bearing label and a label bearing a CCID PLANET™ Code
26 barcode; the address and POSTNET barcode could be pre-printed on a letter
27 and visible through an envelope window, or could be printed directly on an
28 envelope.

29 Once a mail piece bearing a graphic symbology encoding a CONFIRM®
30 service ID has been deposited in the U.S. Postal Service mail stream, the U.S.
31 Postal Service will scan the mail piece at various stages of processing. Each

1 time a CONFIRM® service ID graphic symbology-bearing mail piece is scanned
2 by the U.S. Postal Service, the scanned information, along with details about the
3 scanning event, are electronically captured. Each scan of a mail piece results in
4 the creation of a record containing the following information: Shipment ID, Postal
5 Service facility, Facility ID (ZIP), Date of entry scan (in mm/dd/yyyy format), and
6 time of entry scan (in hh:mm:ss format). The Shipment ID is the CONFIRM®
7 service ID, which, in the case of a mail piece to which a customer mailer has
8 prepared the CONFIRM® label using the exemplary embodiment system,
9 comprises the CCID-encoded bar code label.

10 Scanned data is made available to each CONFIRM® subscriber in more
11 than one way. According to U.S. Postal Service *Publication 197*, the U.S. Postal
12 Service can provide a subscriber with scanned information through File Transfer
13 Protocol (FTP). The U.S. Postal Service also makes scanned information
14 available via password-protected access of a Web site, www.planetcodes.com.

15 FIG. 4 is a high level logic flow diagram depicting an exemplary process
16 for processing electronic scan data in an exemplary embodiment of the present
17 invention. As depicted in FIG. 4, the exemplary embodiment system receives 70
18 the electronic scan data from the U.S. Postal Service in one of the available
19 ways. When the exemplary embodiment system receives electronic scan
20 records, for each received electronic scan record, the system searches 71 the
21 CCID database 27 to identify a non-expired CCID record matching the Shipment
22 ID of the scanned record. When the exemplary embodiment system identifies a
23 non-expired CCID record matching the Shipment ID of a particular scanned
24 record, the system identifies 72 the Print ID, and the correlating customer mailer
25 ID, associated with the CCID record. The system then stores 73 the electronic
26 scan record, and associated Print ID and customer mailer ID information, in a
27 scan data database 74 before returning 75 to other system processing.

28 It will be understood by someone with ordinary skill in the art that the
29 databases identified herein and the database data relationships described herein
30 could be configured in various ways; that the non-limiting exemplary databases

1 identified and their configurations are provided for non-limiting illustrative
2 purposes.

3 The exemplary system can report the scan data for a particular customer's
4 mail piece in various ways. The exemplary system will ask the user before the
5 time that the CCID mail piece tracking label is printed how the user wants to
6 receive information about the mail piece status during processing and at delivery.
7 Among other ways, the exemplary system will provide mail piece tracking status
8 reporting via the following non-limiting exemplary types of reports: on a website,
9 via email to the receiver and/or the sender, via a look-up from a print history of
10 the Internet-based postage system, email notification of expected delivery,
11 wireless notification of expected delivery, and phone look-up.

12 FIG. 5 is a high level logic flow diagram depicting an exemplary process
13 for reporting mail piece tracking information to a customer. As depicted in FIG. 5,
14 when a customer requests 80 status of a particular mail piece, the system will
15 search 81 the scan data database 74 for information about the particular mail
16 piece. When the system locates information about the particular mail piece, the
17 system will report 82 the mail piece status to the customer before returning 83 to
18 other system processing. In the exemplary embodiment, the system will report
19 all scan data received for that particular mail piece.

20 In addition to customer-based reporting, the system will also provide
21 system-wide reporting, including, by non-limiting example: mass mailing reports
22 of everything in the system, facility problem reports, reports of items that have
23 never been scanned, reports of items that were scanned at least once, but have
24 disappeared, average delivery time of mail pieces, average delivery time by
25 region, and average delivery time by mail service class.

26 FIG. 6 is a block diagram depicting an exemplary configuration of server
27 computers and a tracking applications program interface for facilitating tracking of
28 mail pieces in an exemplary embodiment of the present invention. FIG. 6
29 depicts, in a server environment context, an exemplary system configuration for
30 processing mail piece tracking information and for reporting that information to a
31 customer based on a specific tracking request.

1 As depicted in FIG. 6, one to a plurality of postal server computers 103 are
2 provided. The postal server computers 103 serve as main transaction servers for
3 the postal system 1001 (the system to the left of the dotted line 106-106). The
4 postal server computers 103 access the postal database 200. The postal
5 database 200 contains, among other things, information about each registered
6 postal meter, registration information for each customer to which each respective
7 postal meter is registered, CONFIRM® scan events, CONFIRM® exceptions,
8 CONFIRM® fraud detection statistics, refund information, and other types of
9 information. A dedicated USPS Provider Server 104 is provided for accessing a
10 USPS system 105 provided by the USPS.

11 As depicted in FIG. 6, one to a plurality of postal X server computers 102
12 are provided. The postal X server computers 102 serve as backend transaction
13 servers. The postal X server computers 102 respond to requests from
14 transaction-specific type servers, such as a Delivery Confirmation Server 101.

15 The Delivery Confirmation Server 101 provides a tracking request
16 Application Program Interface (API) 100. The tracking request API 100 is a
17 program interface that receives and processes API requests comprising
18 electronic objects of a particular type. Herein, reference to an API Server, or to
19 API Servers, refers to one or more server computers that are programmed to
20 perform various activities comprising particular API functions, including but not
21 limited to receiving and translating various types of API requests and composing
22 and transmitting various types of API responses to the appropriate party's
23 system.

24 In an exemplary embodiment of the invention, the tracking request API
25 100 retrieves and processes tracking API requests in the form of XML
26 (Extensible Markup Language) documents. XML is a markup language for
27 electronic documents. A mark up language such as XML uses certain defined
28 delimiters and tag names to designate meaning and/or organization of marked
29 text within an electronic document.

30 As depicted in FIG. 6, the exemplary system Tracking Request
31 Applications Program Interface (API) 100 would process mail piece scan data,

1 and would store mail piece scan data on the scan data database 74. The
2 Tracking Request API 100 would respond to tracking requests 80 input by a user
3 with a report of mail piece tracking events.
4

5 **TRADEMARKS**

6 CONFIRM®, PRIORITY MAIL®, STANDARD MAIL®, and FIRST-CLASS
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20 **ILLUSTRATIVE EMBODIMENTS**

21 Although this invention has been described in certain specific
22 embodiments, many additional modifications and variations would be apparent to
23 those skilled in the art. It is, therefore, to be understood that this invention may
24 be practiced otherwise than as specifically described. Moreover, to those skilled
25 in the various arts, the invention itself herein will suggest solutions to other tasks
26 and adaptations for other applications. Thus, the embodiments of the invention
27 described herein should be considered in all respects as illustrative and not
28 restrictive, the scope of the invention to be determined by the appended claims
29 and their equivalents rather than the foregoing description.
30
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